



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,436	10/29/2003	Koichiro Hara	501558.20006	6791
26418	7590	09/21/2005	EXAMINER	
REED SMITH, LLP ATTN: PATENT RECORDS DEPARTMENT 599 LEXINGTON AVENUE, 29TH FLOOR NEW YORK, NY 10022-7650				NGUYEN, THINH H
ART UNIT		PAPER NUMBER		
		2861		

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/696,436	HARA, KOICHIRO	
	Examiner Thinh H. Nguyen	Art Unit 2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) 1-17 is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 October 2003 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. ____ .   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/29/03</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: ____ .                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5, 9-10 are rejected under 35 U.S.C. § 102(b) as being anticipated by Uchiyama. (U.S.5,798,776)

Re claims 1, 2, and 5, Uchiyama (table 4, figs.3-5) discloses elements of the instant claimed printing a ink of a first color (black ink)

printing a second ink of a second color other than said first color such that a total volume of at least one droplet of the ink of said color, which is ejected by said second ink ejecting portion (inherently) to form each ink dot of said color on the recording medium, is equal to another of said plurality of different total volume values which is smaller than said selected one total volume value. total volume of at least one droplet of said black ink ejected by said first ink ejecting portion to form each dot of said first ink on a recording medium is equal to a first value, when an image is formed on the recording medium with a predetermined resolution, with a predetermined gray-scale value at a picture element corresponding to said each dot of said first ink; and

a second control portion operable to control said second ink ejecting portion such that a total volume of at least one droplet of said second ink ejected by said second ink ejecting portion to form each dot of said second ink on the recording medium, is equal to a second value smaller than said first value, when said image is formed on the recording medium with said predetermined resolution, with said predetermined gray-scale value at a picture element corresponding to said each dot of said second ink;

Re claims 9, 10, a total volume of at least one droplet of the ink of said another color other than black, which is ejected by a third ink ejecting portion to form each ink dot of said another color other than black on the recording medium, is equal to said , another of said plurality of different total volume values (see Table 4, i.e. combination of inks of 3 or more)

Re claim 5, wherein said first and second control portions are operable to select the total volume of said at least one droplet forming each dot of the black ink, and the total volume of said at least one droplet forming each ink dot of said color other than black, differently depending upon local areas of said image (see printing in accordance with mixing region; col.5), as long as the total volume value of said at least one droplet forming each black ink dot is made larger than the total volume value of said at least one droplet forming each ink dot of said color other than black, in each local area of the image in which the black ink dots are adjacent to the ink dots of said color other than black.

3. Claims 1-17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Terasawa et al. (U.S.6,290,329)

Terasawa discloses elements of the instant claimed color ink-jet recording apparatus and method comprising:

a first ink ejecting portion operable to eject droplets of a first ink of a first color (see black printhead 2A);

a second ink ejecting portion operable to eject droplets of a second ink of a second color other than said first color (see color printheads 2B, 2C, and 2D);

a first control portion (as described by portion of head driving system 23; col.6, line 4) operable to control said first ink ejecting portion such that a total volume of at least one droplet of said first ink ejected by said first ink ejecting portion to form each dot of said first ink on a recording medium is equal to a first value, when an image is formed on the recording medium with a predetermined resolution (as described by double printing in  $\frac{1}{2}$  pitch mode; col.7, lines 5-13), with a predetermined gray-scale value at a picture element corresponding to said each dot of said first ink .

In the context of the respective gray scale values, resolution, and pulse waveform signal generated by pulse generator as claimed in claims 2-4, 6-13, 15-17, any known printer controller having the ability to change drop size and volume are inherently assumed as with the Terasawa printer); and

a second control portion (as described by portion of head driving system 23; col.6, line 4) operable to control said second ink ejecting portion such that a total volume of at least one droplet of said second ink ejected by said second ink ejecting

portion to form each dot of said second ink on the recording medium, is equal to a second value smaller than said first value, when said image is formed on the recording medium with said predetermined resolution, with said predetermined gray-scale value at a picture element corresponding to said each dot of said second ink (see col.7, lines 53-60);

a third ink ejecting portion (as described by portion of head driving system 23; col.6, line 4) operable to eject droplets of a third ink of a third color other than said first and second colors, and a third control portion operable to control said third ink ejecting portion such that a total volume of at least one droplet of said third ink ejected by said third ink ejecting portion to form each dot of said third ink is equal to a third value, when said image is formed on the recording medium with said predetermined resolution, with said predetermined gray-scale value at a picture element corresponding to said each dot of said third color, wherein said third value is equal to one of said first and second values.

Re claim 5, wherein said first and second control portions are operable to select the total volume of said at least one droplet forming each dot of the black ink, and the total volume of said at least one droplet forming each ink dot of said color other than black, differently depending upon local areas of said image, as long as the total volume value of said at least one droplet forming each black ink dot is made larger than the total volume value of said at least one droplet forming each ink dot of said color other than black, in each local area of the image in which the black ink dots are adjacent to the ink

dots of said color other than black. (see col.5, lines 3-27, in the context of printing according to character region or line image region)

Re claim 14, a pulse-waveform-data memory for storing pulse-waveform data indicative of a plurality of different waveforms corresponding to respective different total volume values of at least one droplet of each of the black ink and the ink of said color other than black (col.11, line 35);

***Pertinent Prior art***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,790,152 to Harrington (col.5, line 18+) discloses gray scale (level) and print resolution created by dot sizes capable of being formed by a printhead.

U.S. Patent 5,900,891 to Shimoda and U.S. Patent 6,186,615 to Sato et al. disclose printer capable to form ink dot of black unit having a total volume is greater than that of color.

***Patent Application Information Retrieval (PAIR)***

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

### **Contact Information**

6. Any inquiry concerning this communication should be directed to examiner Thinh Nguyen at telephone number (571) 272-2257. The examiner can generally be reached Mon-Wed, and Thurs from 9:00A – 5:00P. The official fax phone number for the organization is (571) 273-8300. The examiner supervisor, Dave Talbott, can also be reached at (571) 272-1934.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 308-1782.



Thinh Nguyen  
September 18, 2005

**Thinh Nguyen**  
Primary Examiner  
Technology Center 2800